

WHAT IS CLAIMED IS:

1. A light source module, comprising:

a reflector, wherein the reflector comprises a light output section, and a portion of the reflector corresponding to the light output section comprises at least one protrusion;

and

a lamp, disposed in the reflector, wherein the lamp is suitable for emitting a light, and the light is reflected onto other portions of the reflector via the protrusions, and then output from the light output section.

2. The light source module of claim 1, wherein the lamp is a line light source.

3. The light source module of claim 2, wherein the line light source comprises either a Cold Cathode Fluorescence Lamp (CCFL) or a LED array.

4. The light source module of claim 2, wherein the protrusion is either a polygon rib protrusion or a semi-round rib protrusion.

5. The light source module of claim 1, further comprising a reflective layer, wherein the reflective layer is disposed on the protrusion surface.

6. The light source module of claim 5, wherein the reflective layer is made of a material from one of the Al, Sn, SiO₂, and synthesized papers.

7. A light source module, comprising:

a reflector, wherein the reflector comprises a light output section, and a portion of the reflector corresponding to the light output section is a curve F, and a portion of the reflector adjacent to the light output section is a reflective surface S, the curve F is connected to the reflective surface S, and the curve $F = \int dF dS = \int (ax + by + c) dS$, wherein dF is a differential plane that constructs the curve F, dS is a differential plane that

constructs the reflective surface S, and (a, b) is a normal vector of the differential plane dF;
and

a lamp, disposed in the reflector, wherein the lamp is suitable for emitting a light,
and the light is delivered onto the reflective surface S via the curve F after reflection
5 occurs at least once, and then output from the light output section.

8. The light source module of claim 7, wherein the lamp is a line light source, and
the line light source is extended in parallel with z axis.

9. The light source module of claim 8, wherein the line light source comprises
either a Cold Cathode Fluorescence Lamp (CCFL) or a LED array.

10 10. The light source module of claim 7, further comprising a reflective layer,
wherein the reflective layer is disposed on the surface of the curve F and the reflective
surface S.

11. The light source module of claim 10, wherein the reflective layer is made of a
material from one of the Al, Sn, SiO₂, and synthesized papers.

15 12. The light source module of claim 7, wherein the reflective surface S comprises
either an elliptical curve or a parabolic curve, and a plane.

13. A method for designing the light source module, comprising:

providing a reflector, wherein the reflector comprises a light output section, and a
portion of the reflector corresponding to the light output section is designed as a curve F,
20 and a portion of the reflector adjacent to the light output section is a reflective surface S
that is connected to the curve F, and the curve $F = \int dF dS = \int (ax + by + c) dS$, wherein
dF is a differential plane that constructs the curve F, dS is a differential plane that

constructs the reflective surface S, and (a, b) is a normal vector of the differential plane dF;
and

disposing a lamp in the reflector, so that a light emitted by the lamp is delivered
onto the reflective surface S via the curve F after reflection occurs at least once, and then
5 output from the light output section.

14. The method for designing the light source module of claim 13, wherein the
method for designing the curve F comprises:

(a) assuming the equation of the reflective surface S is known;

(b) the differential plane dF is related to vectors $\vec{A}, \vec{B}, \vec{C}$, wherein \vec{A} is a
10 proceeding vector of the light emitted from each unit area on the back of the lamp; \vec{B} is a
proceeding vector of the light reflected from each unit of the differential plane dS when
the document is being scanned; and \vec{C} is a reflective vector of \vec{B} corresponding to each
unit area of dS on the reflective surface S;

(c) calculating a angle bisect **vector** according to two vectors \vec{A} and \vec{C} , and the
15 angle bisect **vector** is a normal vector dN of the differential plane dF, and assuming that
the calculated normal vector dN is (a, b) and the normal vector is on the X-Y plane, the
equation of differential plane dF is assumed as $ax+by+c=0$;

(d) calculating a focal point M from two vectors \vec{A} and \vec{C} , since the focal point M
is on the differential plane dF, a coordinate of focal point M is brought into $ax+by+c=0$,
20 so as to calculate a value of c; and

(e) performing integration for differential plane dF on either dS or $d\theta$, and providing a boundary condition, so as to obtain the equation of curve F , i.e. $F = \int dF dS = \int (ax + by + c) dS$.

15. The method for designing the light source module of claim 13, wherein the reflective surface S comprises either an elliptical curve or a parabolic curve, and a plane.

16. The method for designing the light source module of claim 13, wherein the lamp is a line light source, and the line light source is extended in parallel with z axis.

17. The method for designing the light source module of claim 16, wherein the line light source comprises either a Cold Cathode Fluorescence Lamp (CCFL) or a LED array.

18. The method for designing the light source module of claim 13, further comprising disposing a reflective layer on the surface of the curve F and the reflective surface S .

19. The method for designing the light source module of claim 18, wherein the reflective layer is made of a material from one of the Al , Sn , SiO_2 , and synthesized papers.